SIEMENS

LITHOSTAR Multiline

SP

System

Troubleshooting Instructions

Errors by error codes

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General errors

Error number

↓	**Meaning:**
01	PROM_error
02	INT_RAM_error
03	EXT_RAM_error
04	TIMER_0_error
05	TIMER_1_error
06	KERN_TEST_error
07	SFR_error
09	WATCHDOG_error

ZR am1 (Lifting column right)

Error number

↓	**Meaning:**
10	LM_628_error
11	Control_error
12	Position accuracy not reached in stated stabilizing time
13	Motor not initialized, drive command received
14	Motor moves without actuation
15	Motor does not move when actuated
16	Speed not reached or exceeded
17	Motor moves in wrong direction
18	Motor unsuccessfully actuated three times
19	Faulty initialization of the ASIC

ZL am2 (Lifting column left)

Error number

↓	**Meaning:**
20	LM_628_error
21	Control_error
22	Position accuracy not reached in stated stabilizing time
23	Motor not initialized, drive command received
24	Motor moves without actuation
25	Motor does not move when actuated
26	Speed not reached or exceeded
27	Motor moves in wrong direction
28	Motor actuated unsuccessfully three times
29	Faulty initialization of the ASIC

W drive am3

Error number

↓	**Meaning:**
30	LM_628_error
31	Control_error
32	Position accuracy not reached in stated stabilizing time
33	Motor not initialized, drive command received
34	Motor moves without actuation
35	Motor does not move when actuated
36	Speed not reached or exceeded
37	Motor moves in wrong direction
38	Motor unsuccessfully actuated three times
39	Faulty initialization of the ASIC

O drive am4 (C-Arm)

Error number:

↓	**Meaning:**
40	LM_628_error
41	Control_error
42	Position accuracy not reached in stated stabilizing time
43	Motor not initialized, drive command received
44	Motor moves without actuation
45	Motor does not move when actuated
46	Speed not reached or exceeded
47	Motor moves in wrong direction
48	Motor unsuccessfully actuated three times
49	Faulty initialization of the ASIC

Board errors, general

Error number:

↓	**Meaning:**
60	No first contact with HOST
61	TIMEOUT, data exchange disrupted
62	CHECKSUM_error

General errors

Error number

↓	**Meaning:**
01	PROM_error
02	INT_RAM_error
03	EXT_RAM_error
04	TIMER_0_error
05	TIMER_1_error
06	KERN_TEST_error
07	SFR_error
09	WATCHDOG_error

X drive am5

Error number

↓	**Meaning:**
10	LM_628_error
11	Control_error
12	Position accuracy not reached in stated stabilizing time
13	Motor not initialized, drive command received
14	Motor moves without actuation
15	Motor does not move when actuated
16	Speed not reached or exceeded
17	Motor moves in wrong direction
18	Motor actuated unsuccessfully three times
19	Faulty initialization of the ASIC

Y drive am6

Error number

↓	**Meaning:**
20	LM_628_error
21	Control_error
22	Position accuracy not reached in stated stabilizing time
23	Motor not initialized, drive command received
24	Motor moves without actuation
25	Motor does not move when actuated
26	Speed not reached or exceeded
27	Motor moves in wrong direction
28	Motor actuated unsuccessfully three times
29	Faulty initialization of the ASIC

TVI Television iris am7

Error number

↓	**Meaning:**
30	LM_628_error
31	Control_error
32	Position accuracy not reached in stated stabilizing time
33	Motor not initialized, drive command received
34	Motor moves without actuation
35	Motor does not move when actuated
36	Speed not reached or exceeded
37	Motor moves in wrong direction
38	Motor unsuccessfully actuated three times
39	Faulty initialization of the ASIC

TL Cone drive, longitudinal, am8

Error number

↓	**Meaning:**
40	LM_628_error
41	Control_error
42	Position accuracy not reached in stated stabilizing time
43	Motor not initialized, drive command received
44	Motor moves without actuation
45	Motor does not move when actuated
46	Speed not reached or exceeded
47	Motor moves in wrong direction
48	Motor unsuccessfully actuated three times
49	Faulty initialization of the ASIC

TR Cone drive, rotation, am9

Error number

↓	**Meaning:**
50	LM_628_error
51	Control_error
52	Position accuracy not reached in stated stabilizing time
53	Motor not initialized, drive command received
54	Motor moves without actuation
55	Motor does not move when actuated
56	Speed not reached or exceeded
57	Motor moves in wrong direction
58	Motor unsuccessfully actuated three times
59	Faulty initialization of the ASIC

Board errors, general

Error number:

↓	**Meaning:**
60	No first contact with HOST
61	TIMEOUT, data exchange disrupted
62	CHECKSUM_error

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NOTICE

Code "55" is displayed when the system is operating without errors.

Code "60" also appears if the system is not equipped with the ultrasound option.

Error displays of the collimator interface:

Error No.	Meaning
10	No first contact to the HOST (status message)
11	Timeout error from the HOST
12	Fatal error in the data reception block from the HOST
13	Illegal data in the reception block
14	Illegal value in the data reception flag from the HOST
15	No first contact to collimator N
16	Collimator timeout error
17	Data reception error from collimator
18	Continuous communication error to collimator
19	Reception queue full
1A	DPR reception area error
1B	CAN module error
1C	Invalid values in reception block

Error displays of the operating master interface:

Error No.	Meaning
20	No first contact to the HOST (status message)
21	Timeout error from the HOST
22	Fatal error in the data reception block from the HOST
23	Wrong block type in the data reception block from the HOST
24	Illegal value in the data reception flag from the HOST
25	No first contact to slaves (status message)
26	Slave timeout error
27	Data reception error from slave
28	Serial transmitter not free
2A	DPR reception area error
7x	Timeout slave no. x
8x	Data reception error slave no. x

Error displays of the image memory interface:

Error No.	Meaning
30	No first contact to the HOST (status message)
31	Timeout error from the HOST
32	Fatal error in the data reception block from the HOST
33	Illegal data in the data reception block from the HOST
34	Illegal value in the data reception flag from the HOST
35	No first contact to the image memory (status message)
36	Image memory timeout error
37	Data reception error from image memory
38	Serial transmitter not free
3A	Error in the DPR reception area

Error displays of the shock wave system interface:

Error No.	Meaning
40	No first contact to the HOST (status message), System not registered
41	Timeout error from the HOST
42	Fatal error in the data reception block from the HOST
43	Illegal data in the data reception block from the HOST
44	Illegal value in the data reception flag from the HOST
45	No first contact to the shock wave system (status message)
46	Shock wave system timeout error
47	Data reception error from shock wave system
48	Serial transmitter not free
4A	Error in the DPR reception area
4E	Respiratory trigger signal timeout

Error displays of the brightness actual value interface:

Error No.	Meaning
50	No first contact to the HOST (status message)
51	Timeout error from the HOST
52	Fatal error in the data reception block from the HOST
53	Illegal data in the data reception block from the HOST
54	Illegal value in the data reception flag from the HOST
55	No first contact to the brightness actual value (status message)
56	Timeout error from the brightness value actual value signal device
57	Data reception error of brightness actual value
58	Serial transmitter not free
5A	Error in the DPR reception area

Error displays of the ultrasound interface:

Error No.	Meaning
60	No first contact to the HOST (status message)
61	Timeout error from the HOST
62	Fatal error in the data reception block from the HOST
63	Illegal data in the reception block from the HOST
64	Illegal value in the data reception flag from the HOST
65	No first contact to ultrasound system
66	Timeout error from ultrasound system
67	Error in block reception from ultrasound system
68	Error in block transmission to ultrasound system
69	Transmission buffer not empty (component)
6A	Error in the DPR reception area

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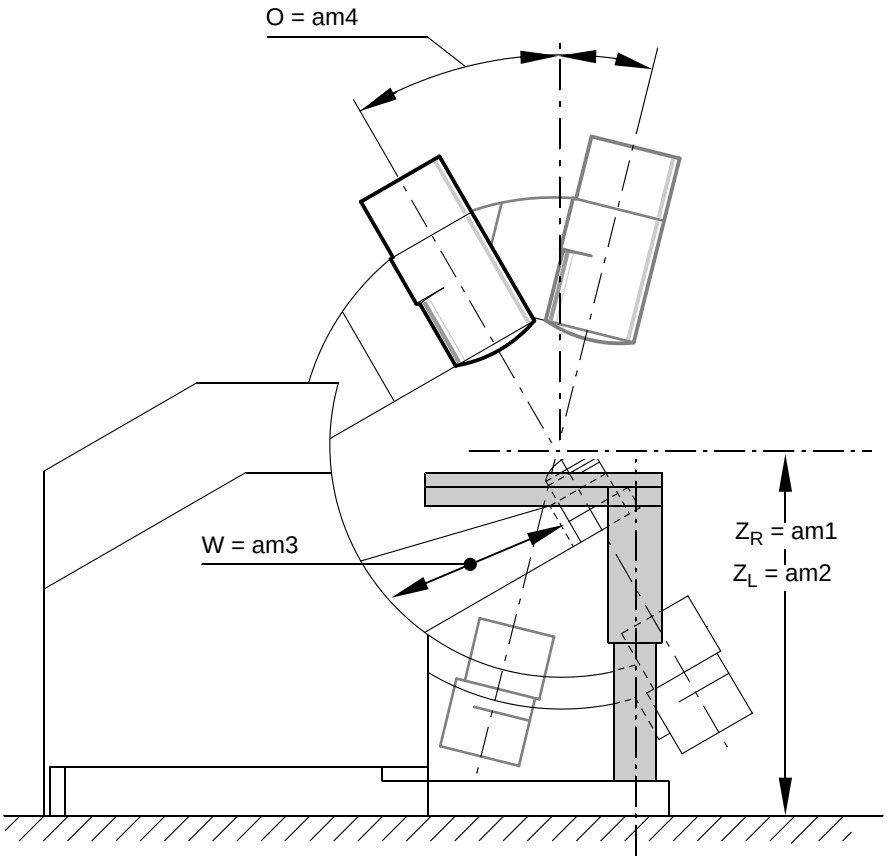
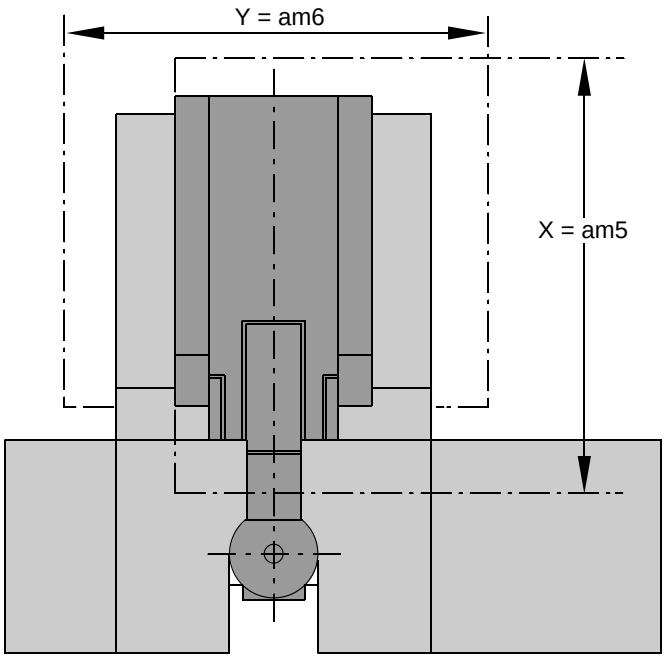
Overview and explanations of the unit drives



TVI	=	Television iris on the television camera
TL	=	Cone longitudinal
TR	=	Cone rotation
SWO	=	Shock wave head, orbital
I.I.	=	Image intensifier lift

O	C arm
Y	Unit, longitudinal
X	Unit, lateral
ZR, ZL	Table, up
W	Shockwave head



Definition of the slave numbers

Assigment: Slave no./Slave name

Slave no.	Slave name	Abbreviation
0	PC-Board	HBF
2	Tableside control panel on PC	NBF
3	Memoskop image memory	BS
4	Memoskop image memory BSHD	BSHD
7	Tableside control panel 1 (basic unit)	NBF
8	Footswitch	NBFFT
9	Tableside control panel (Ultrasound unit)	NBFUS
10	Shock Wave System	SWS

NOTICE

Error messages in ERRO.LOG starting with FD... (Error text not available) are internal error messages without any meaning for field service.

Errors in the error log are identified with a letter in addition to the error number.

E = Error

These errors can be cleared by the software during the next check.

F = Fatal Error

System operation is stopped. The error may be cleared by resetting the system (switching the system ON/OFF).

W = Warning

System operation may continue without restrictions.

I = Information

These error numbers are for information only. They are not relevant to service.

General errors

Error No.	Error display on the service PC		Meaning of the error
0001	Switch-on routine	Switch-on routine: point in time at which the unit was switched on. Identifies associated errors and required switch off/on procedures.	
0002	Service reset		
0010	Contactors K1/K2 closed, no 27V present		
0011	Contactor K3 closed, no 30V present	no safety contactor closed?	
0012	Contactors K1/K2 open, no 0V present		
0013	Contactor K3 open, no 0V present		
0020	Error: reference switch check / ZR	am 1	Check the reference switch for errors 0020 to 002B
0021	Error: reference switch check / ZL	am 2	
0022	Error: reference switch check /W	am 3	
0023	Error: reference switch check /O	am 4	
0025	Error: reference switch check / X	am 5	
0026	Error: reference switch check / Y	am 6	
0028	Error: reference switch check / TL	am 8	
0029	Error: reference switch check / TR	am 9	
002A	Error: reference switch check / SWO	am 10	
002B	Error: reference switch check / I.I.	am 11	
0050	Emergency stop is operated		Emergency stop active
0070	ADC time is exceeded / converter 1		Error on board D5
0071	ADC time is exceeded / converter 2		Error on board D5
0080	ADC value out of tolerance / channel 0		ZR Drive
0081	ADC value out of tolerance / channel 1		ZL Drive
0082	ADC value out of tolerance / channel 2		W Drive
0083	ADC value out of tolerance / channel 3		O Drive
0084	ADC value out of tolerance / channel 4		X Drive
0085	ADC value out of tolerance / channel 5		Y Drive
0086	ADC value out of tolerance / channel 6		
0087	ADC value out of tolerance / channel 7		
0088	ADC value out of tolerance / channel 8		TVI Drive
0089	ADC value out of tolerance / channel 9		
008A	ADC value out of tolerance / channel 10		TL Drive
008B	ADC value out of tolerance / channel 11		TR Drive
008C	ADC value out of tolerance / channel 12		
008D	ADC value out of tolerance / channel 13		
008E	ADC value out of tolerance / channel 14		
008F	ADC value out of tolerance / channel 15		

Error No.	Error display on the service PC	Meaning of the error
0090	ADC reference voltage out of tolerance	5.12V ± 60mV
0091	24V ADC supply out of tolerance	24V 3V
0092	27V ADC supply out of tolerance	27V - 9V / + 13V
0093	30V ADC supply out of tolerance	3DV - 10V / + 9V SS relay dropped out
0094	No signal of stopping potential	
0F00	System is not initialized	

The system is not initialized or the ROM version is wrong. The version number of the HOST software and the parameters in the EEPROM do not match (the first two places).
If, however, the software is present, then parameters are missing or the version numbers of the HOST software or the parameters in the EEPROM do not match.
The error will be displayed after the download routine. Repeat the download routine.

Boot software

Error No.	Error display on the service PC	Meaning of the error
1000	Flash - EEPROM is empty	Download HOST software again
1003	Flash EEPROM checksum error	Incorrect checksum in the Flash EEPROMs. Download HOST software again.
1004	No access to clock	Set the clock again and perform Reset. If the error still exists, replace PC board D1.
1005	Clock is not initialized	Set the clock again and perform Reset. If the error still exists, replace PC board D1.
1009	Incorrect checksum with block receipt	Incorrect checksum when a block is received from the service PC/interface driver. The problem is in the service PC or HOST. Interference during transmission.
100A	Incorrect command from Service PC	Error in the data transmission between the service PC and the HOST. The service software version and the boot software version do not match. Compare with the compatibility list in the logbook.
100B	Incorrect block length from Service PC	Error in the data transmission between the service PC and the HOST. The service software version and the boot software version do not agree. Compare with the compatibility list in the logbook.
100C	Incorrect segment address from Service PC	Incorrect segment address from the service PC for writing on EPROM. Error in IDX file; install the backup copy.
100D	Parity error	Error in the communication between the service PC and the HOST. Hardware problem or electromagnetic compatiblity (EMC) interference. If necessary, perform the transfer again.
100E	Overrun error	Receive buffer of the serial interface at the service PC has been exceeded.
100F	Framing error	Error in the communication between the service PC and the HOST. Hardware problem or electromagnetic compatibility (EMC) interference. If necessary, perform the transfer again.
1010	Break error	Service PC was switched off before the serial connection closed. This message is also displayed if hardware errors are present on board D1.
1011	Timeout error	
1012	Error: Switch S2.8 (D1) = On	After three unsuccessful attempts to transfer, transmission between the HOST and the service PC is terminated.

Operating system

Error No.	Error text displayed on the service PC	
	Meaning of the error	
3YXX	3 = Op. system	Y = Slave XX = error type
		0 = Operating PC (HBF) keyboard + mouse
		2 = Tableside control/control desk(NBF)
		7 = Tableside control/unit (NBF)
		8 = Footswitch (NBFFT)
		9 = Ultrasound operating panel (BFUS)
3001	HBF timeout	
3002	Receive error of D6 from HBF	(D6 = Communication Controller)
3003	NAK error of HBF from D6	(NAK = no acknowledge)
3004	HBF Sent invalid block length	
3005	HBF didn't respond ACK/NAK	
3009	Serial Interface of D6 is faulty	
3030	HBF: Data error from D1	
3032	HBF FIFO overrun during transmission	
3033	HBF FIFO overrun during reception	
3040	PC doesn't react to transmission	
3041	Reception timeout, PC does not transmit	
3042	Timeout of First PC contact after 60s	
3043	Invalid data from PC	
3044	Checksum error from PC	
3045	New init request from PC	
3050	Data overrun → HBF data update	
3051	HBF: Timeout to D6	
3081	HBF: Watchdog hit	
3083	No contact to PC	
3201	NBF Timeout	
3202	Reception error of D6 from NBF	
3203	NAK error of NBF from D6	(NAK = no acknowledge)
3204	NBF Sent invalid block length	
3205	NBF didn´t respond ACK/NAK	
3209	Serial interface of D6 is faulty	
3231	NBF: Data error from D1	
3250	Data overrun	
3251	NBF: Timeout to D6	
3252	NBF: Keyboard buffer overflow	
3260	NBF: Actuated or defective key	NBF:Actuated or defective key
3281	NBF: Watchdog hit	
3701	NBF Timeout	
3702	Reception error of D6 from NBF	

Error No.	Error text displayed on the service PC	
3703	NAK error of NBF from D6	(NAK = no acknowledge)
3704	NBF Sent invalid block length	
3705	NBF didn't respond ACK/NAK	
3709	Serial Interface of D6 is faulty	
3731	NBF: Data error from D1	
3750	Data overrun → NBF data update	
3751	NBF:Timeout to board D6	
3752	NBF: Keyboard buffer overflow	
3760	NBF: Actuated or defective key	NBF: Actuated or defective key
3781	NBF: Watchdog hit	
3801	NBFFT timeout	
3802	Reception error of D6 from NBFFT	
3803	NAK error of NBFFT from D6	(NAK = no acknowledge)
3804	NBFFT Sent invalid block length	
3805	NBFFT didn't respond ACK/NAK	
3809	Serial Interface of D6 is faulty	
3831	NBFFT: Data error from D1	
3850	Data overrun → NBFFT data update	
3851	NBFFT: Timeout to board D6	
3852	NBFFT: Keyboard buffer overflow	
3860	NBFFT: actuated or defective key	NBFFT: Actuated or defective key
3881	NBFFT: Watchdog hit	
3901	NBFUS:Timeout	
3902	Reception error of D6 from NBFUS	
3903	NAK error of NBFUS from D6	(NAK = no acknowledge)
3904	NBFUS: Sent invalid block length	
3905	NBFUS: didn‘t respond ACK/NAK	
3909	Serial Interface of D6 is faulty	
3931	NBFUS: Data error from D1	
3950	Data overrun → NBFUS data update	
3951	NBFUS: Timeout to board D6	
3952	NBFUS: Keyboard buffer overflow	
3960	NBFUS: actuated or defective key	NBFUS: Actuated or defective key
3981	NBFUS: Watchdog hit	

Drive

Error No.	Error text displayed on the service PC	
4000	Protocol error of MC1 (D4a)	
4001	Protocol error of MC2 (D4b)	
4002	Protocol error of MC3 (D4c)	
4100	Hardware error. MC1 (D4a)	
4101	Hardware error. MC2 (D4b)	
4102	Hardware error. MC3 (D4c)	
4110	MC1 (D4a) disabled	
4111	MC2 (D4b) disabled	
4112	MC3 (D4c) disabled	
4120	Target position from D1 too large / Z_R	am 1
4121	Target position from D1 too large / Z_L	am 2
4122	Target position from D1 too large / W	am 3
4123	Target position from D1 too large / O	am 4
4125	Target position from D1 too large / X	am 5
4126	Target position from D1 too large / Y	am 6
4127	Target position from D1 too large / TVI	am 7
4128	Target position from D1 too large / TL	am 8
4129	Target position from D1 too large / TR	am 9
412A	Target position from D1 too large / SWO	am 10
412B	Target position from D1 too large / I.I.	am 11
4130	Invalid command from D1 / ZR	am 1
4131	Invalid command from D1 / ZL	am 2
4132	Invalid command from D1 / W	am 3
4133	Invalid command from D1 / O	am 4
4135	Invalid command from D1 / X	am 5
4136	Invalid command from D1 / Y	am 6
4137	Invalid command from D1 / TVI	am 7
4138	Invalid command from D1 / TL	am 8
4139	Invalid command from D1 / TR	am 9
413A	Invalid command from D1 / SWO	am 10
413B	Invalid command from D1 / I.I.	am 11
4140	Control error / ZR	am 1
4141	Control error / ZL	am 2
4142	Control error / W	am 3
4143	Control error / O	am 4
4145	Control error / X	am 5

Error No.	Error text displayed on the service PC	
4146	Control error / Y	am 6
4147	Control error / TVI	am 7
4148	Control error / TL	am 8
4149	Control error / TR	am 9
414A	Control error / SWO	am 10
414B	Control error / I.I.	am 11
4150	Invalid parameter from D1 / ZR	am 1
4151	Invalid parameter from D1 / ZL	am 2
4152	Invalid parameter from D1 / W	am 3
4153	Invalid parameter from D1 / O	am 4
4155	Invalid parameter from D1 / X	am 5
4156	Invalid parameter from D1 / Y	am 6
4157	Invalid parameter from D1 / TVI	am 7
4158	Invalid parameter from D1 / TL	am 8
4159	Invalid parameter from D1 / TR	am 9
415A	Invalid parameter from D1 / SWO	am 10
415B	Invalid parameter from D1 / I.I.	am 11
4160	Invalid position from D1 / ZR	am 1
4161	Invalid position from D1 / ZL	am 2
4162	Invalid position from D1 / W	am 3
4163	Invalid position from D1 / O	am 4
4165	Invalid position from D1 / X	am 5
4166	Invalid position from D1 / Y	am 6
4167	Invalid position from D1 / TVI	am 7
4168	Invalid position from D1 / TL	am 8
4169	Invalid position from D1 / TR	am 9
416A	Invalid position from D1 / SWO	am 10
416B	Invalid position from D1 / I.I.	am 11
4170	Invalid data for motor initialization / ZR	am 1
4171	Invalid data for motor initialization / ZL	am 2
4172	Invalid data for motor initialization / W	am 3
4173	Invalid data for motor initialization / O	am 4
4175	Invalid data for motor initialization / X	am 5
4176	Invalid data for motor initialization / Y	am 6
4177	Invalid data for motor initialization / TVI	am 7
4178	Invalid data for motor initialization / TL	am 8
4179	Invalid data for motor initialization / TR	am 9
417A	Invalid data for motor initialization / SWO	am 10
417B	Invalid data for motor initialization / I.I.	am 11

Error No.	Error text displayed on the service PC		
4180	Motor activated without drive signal / ZR	am 1	
4181	Motor activated without drive signal / ZL	am 2	
4182	Motor activated without drive signal / W	am 3	
4183	Motor activated without drive signal / O	am 4	
4185	Motor activated without drive signal / X	am 5	
4186	Motor activated without drive signal / Y	am 6	
4187	Motor activated without drive signal / TVI	am 7	
4188	Motor activated without drive signal / TL	am 8	
4189	Motor activated without drive signal / T_R	am 9	
418A	Motor activated without drive signal / SWO	am 10	
418B	Motor activated without drive signal / I.I.	am 11	
4190	Motor not activated by drive signal / ZR	am 1	Check the fuses, check the output stages (D7...), check the LED on D4
4191	Motor not activated by drive signal / ZL	am 2	
4192	Motor not activated by drive signal / W	am 3	
4193	Motor not activated by drive signal / O	am 4	
4195	Motor not activated by drive signal / X	am 5	
4196	Motor not activated by drive signal / Y	am 6	
4197	Motor not activated by drive signal / TVI	am 7	
4198	Motor not activated by drive signal / TL	am 8	
4199	Motor not activated by drive signal / TR	am 9	
419A	Motor not activated by drive signal / SWO	am 10	
419B	Motor not activated by drive signal / I.I.	am 11	
41A0	Drive speed not reached / ZR	am 1	
41A1	Drive speed not reached / ZL	am 2	
41A2	Drive speed not reached / W	am 3	
41A3	Drive speed not reached / O	am 4	
41A5	Drive speed not reached / X	am 5	
41A6	Drive speed not reached / Y	am 6	
41A7	Drive speed not reached / TVI	am 7	
41A8	Drive speed not reached / TL	am 8	
41A9	Drive speed not reached / TR	am 9	
41AA	Drive speed not reached / SWO	am 10	
41AB	Drive speed not reached / I.I.	am 11	
41B0	Motor rotation in reverse direction / ZR	am 1	
41B1	Motor rotation in reverse direction / ZL	am 2	
41B2	Motor rotation in reverse direction / W	am 3	
41B3	Motor in reverse direction / O	am 4	
41B5	Motor in reverse direction / X	am 5	

Error No.	Error text displayed on the service PC	
41B6	Motor in reverse direction / Y	am 6
41B7	Motor in reverse direction / TVI	am 7
41B8	Motor in reverse direction / TL	am 8
41B9	Motor in reverse direction/ TR	am 9
41BA	Motor in reverse direction / SWO	am 10
41BB	Motor in reverse direction / I.I.	am 11
41C0	Repeated fatal error of motor / ZR	am 1
41C1	Repeated fatal error of motor / ZL	am 2
41C2	Repeated fatal error of motor / W	am 3
41C3	Repeated fatal error of motor / O	am 4
41C5	Repeated fatal error of motor / X	am 5
41C6	Repeated fatal error of motor / Y	am 6
41C7	Repeated fatal error of motor / TVI	am 7
41C8	Repeated fatal error of motor / TL	am 8
41C9	Repeated fatal error of motor / TR	am 9
41CA	Repeated fatal error of motor / SWO	am 10
41CB	Repeated fatal error of motor / I.I.	am 11
41D0	Drive timeout for motor indicated / ZR	am 1
41D1	Drive timeout for motor indicated / ZL	am 2
41D2	Drive timeout for motor indicated / W	am 3
41D3	Drive timeout for motor indicated / O	am 4
41D5	Drive timeout for motor indicated / X	am 5
41D6	Drive timeout for motor indicated / Y	am 6
41D7	Drive timeout for motor indicated / TVI	am 7
41D8	Drive timeout for motor indicated / TL	am 8
41D9	Drive timeout for motor indicated / TR	am 9
41DA	Drive timeout for motor indicated / SWO	am 10
41DB	Drive timeout for motor indicated / I.I.	am 11
4280	ADC/MC pos. comparison failure / ZR	am 1
4281	ADC/MC pos. comparison failure / ZL	am 2
4282	ADC/MC pos. comparison failure / W	am 3
4283	ADC/MC pos. comparison failure / O	am 4
4285	ADC/MC pos. comparison failure / X	am 5
4286	ADC/MC pos. comparison failure / Y	am 6
4287	ADC/MC pos. comparison failure / TVI	am 7
4288	ADC/MC pos. comparison failure / TL	am 8
4289	ADC/MC pos. comparison failure / TR	am 9
428A	ADC/MC pos. comparison failure / SWO	am 10
428B	ADC/MC pos. comparison failure / I.I.	am 11

Error No.	Error text displayed on the service PC		Meaning of the error
4290	Drive moves without actuation / ZR	am 1	Drive moves without signal / ZR
4291	Drive moves without actuation / ZL	am 2	Drive moves without signal / ZL
4292	Drive moves without actuation / W	am 3	Drive moves without signal / W
4293	Drive moves without actuation / O	am 4	Drive moves without signal / O
4295	Drive moves without actuation / X	am 5	Drive moves without signal / X
4296	Drive moves without actuation / Y	am 6	Drive moves without signal / Y
4297	Drive moves without actuation / TVI	am 7	Drive moves without signal / TVI
4298	Drive moves without actuation / TL	am 8	Drive moves without signal / TL
4299	Drive moves without actuation / TR	am 9	Drive moves without signal / TR
429A	Drive moves without actuation / SWO	am 10	Drive moves without signal / SWO
429B	Drive moves without actuation / I.I.	am 11	Drive moves without signal / I.I.
42A0	Error in averaging / ZR		Error in averaging / ZR
42A1	Error in averaging / ZL		Error in averaging / ZL
42A2	Error in averaging / W		Error in averaging/ W
42A3	Error in averaging / O		Error in averaging/ O
42A5	Error in averaging / X		Error in averaging / X
42A6	Error in averaging / Y		Error in averaging / Y
42A7	Error in averaging / TVI		Error in averaging/ TVI
42A8	Error in averaging / TL		Error in averaging / TL
42A9	Error in averaging / TR		Error in averaging / TR
42AA	Error in averaging / SWO		Error in averaging / SWO
42AB	Error in averaging / I.I.		Error in averaging / I.I.

Error No.	Error text displayed on the service PC	Meaning of the error
42B0	Outside max. operating limits / ZR	Outside max. operating limits /ZR
42B1	Outside max. operating limits / ZL	Outside max. operating limits /ZL
42B2	Outside max. operating limits / W	Outside max. operating limits /W
42B3	Outside max. operating limits / O	Outside max. operating limits /O
42B5	Outside max. operating limits / X	Outside max. operating limits / X
42B6	Outside max. operating limits / Y	Outside max. operating limits /Y
42B7	Outside max. operating limits / TVI	Outside max. operating limits /TVI
42B8	Outside max. operating limits / TL	Outside max. operating limits /TL
42B9	Outside max. operating limits / TR	Outside max. operaing limits /TR
42BA	Outside max. operating limits / SWO	Outside max. operating limits /SWO
42BB	Outside max. operating limits / I.I.	Outside max. operating limits /I.I.

Shock Wave System

Error No.	Error text displayed on the service PC	Meaning of the error
51XX	Removable error restricts interface function marginally. The D1 can reset the error and restart operation.	
5101	SWS timeout	(**S**hock **W**ave **S**ystem)
5102	Reception error of D6 from SWS	
5103	NAK error of SWS from D6.	(NAK = no acknowledge)
5104	SWS Sent invalid block length	
5105	SWS didn' t respond ACK/ NAK	
5109	Serial Interface of D6 is faulty	
5111	Respiratory trigger time-out	
5150	Receive FIFO overrun	
5151	Polling timeout	
5152	Watchdog reset	
5153	Nominal energy is not actual	
5154	Shock counter doesn't work D19	Check the setting D19.R47

52XX	Error. The interface controller malfunctioned. One or several active jobs will be aborted. The D1 can no longer reset the error.	
5201	Valve Y1 overheating	W11/X1,z22 = high (no associated LED)
5202	Valve Y1 open load	W11/X1,d4 = high (no associated LED)
5203	Valve Y1 short circuit	W11/X1,d12 = high (no associated LED)
5204	Cooling system faulty	W11/X1,d16 = high and yellow LED W11/V11 lights up. Display at cooling water overtemperature is okay despite flow
5205	Water container empty	W11/X1,z10 = high and yellow LED W11/V9 lights up
5206	Supply reserve	W11/X1,b12 = high and yellow LED W11/V10 lights up
5207	Temperature too high	W11/X1,z14 = high (no associated LED)
5241	Motor M20 overload	W12/X1,b32 = high and red LED W12/V21 lights up
5261	Energy generation error	W15/X1,z10 = high and yellow LED W15/V2 lights up
5262	Shockwave head error	W15/X1,z14 = high and yellow LED W15/V3 lights up
5281	D19 self ignition	D19/X1,b14 = high and yellow LED D19/V33 lights up
5282	D19 $kA_{actual} < kA_{min}$	D19/X1,b16 = high and yellow LED D19/V32 lights up
5283	D19 $U_{residual}$ is too high	D19/X1,b12 = high and red LED D19/V9 lights up

Error No.	Error text displayed on the service PC	Meaning of the error
53XX	Fatal Error:	The occurrence of fatal errors blocks the controller interface. Resetting these errors by software is no longer possible.
5301	Pressure too high switch S4	Pressure > 800mbar ± 30 mbar switch S4 W11/X1,b14 = high and red LED W11/V14 lights up
5302	Pressure too low sensor SH	Pressure < 210mbar + 30 mbar W11/X1,z20 = high and red LED W11/V5 lights up; the cooling circuit pressure sensor signals that the system has not reached the control range.
5303	Temperature too high sensor SH	Temperature > 38 C sensor W11/X1,b18 = high and red LED W11/V15 lights up; the cooling circuit pressure temperature sensor signals that the system has exceeded the control range.
5304	Flowmeter faulty	W11/X1,b14 = high and red LED W11/V13 lights up. During the switch-on reset, flow okay has been signalled.
5305	Pressure too high sensor	Pressure > 500mbar + 30 mbar sensor W11/X1,d14 = high and red LED W11/V13 lights up; the cooling circuit pressure sensor signals that the control range has been exceeded.
5306	Flow (l/H) too low	W11/X1,z12 = high and red LED W11/V12 lights up
5307	Cooling system faulty	W11/X1,d18 = low and green LED W11/V3 is dark (= shot triggering inhibited)
5341	End of lift min/max	W12/X1,z18 = high and red LED W12/V17 lights up. (either the min. or the max. limit of lift is exceeded).
5361	kV-limit error	W15/X1,z26 = high and red LED W15/V5 lights up.
5362	Energy generation error	W15/X1,z8 = high and red LED W15/V1 lights up
5363	Shockwave generator error	W15/X1,z16 = high and red LED W15/V4 lights up
5364	Invalid kV value acknowledge message	W15/X1,z16 = high and red LED W15/V4 lights up. Acknowledged kV value is wrong: Message software W16 (no associated LED) from W15. The kV value received deviates by >14% from the expected value.
5381	D19 $kV_{actual} > kV_{max}$	see chapter 7
5382	D19 $kV_{actual} < > kV_{selected}$	
5383	D19 $kA_{actual} > kA_{max}$	
5391	D91 Error memory	see chapter 8
5392	D19 Error memory	

General errors

Error No.	Error text displayed on the service PC
6100	Checksum error / MC1 (D4a)
6101	Checksum error / MC2 (D4b)
6102	Checksum error / MC3 (D4c)
6103	Checksum error / Collimator
6104	Checksum error / Operator-Master
6105	Checksum error / Image Storage
6106	Checksum error / Shock Wave System
6107	Checksum error / Actual Brightness Value
6108	Checksum error / Ultrasound
6110	Wrong block length / MC1 (D4a)
6111	Wrong block length / MC2 (D4b)
6112	Wrong block length / MC3 (D4c)
6113	Wrong block length / Collimator
6114	Wrong block length / Operator-Master
6115	Wrong block length / Image Storage
6116	Wrong block length / Shock Wave System
6117	Wrong block length / Actual Brightness Value
6118	Wrong block length / Ultrasound
6120	Subsystem timeout / MC1 (D4a)
6121	Subsystem timeout / MC2 (D4b)
6122	Subsystem timeout / MC3 (D4c)
6123	Subsystem timeout / Collimator
6124	Subsystem timeout / Operator-Master
6125	Subsystem timeout / Image Storage
6126	Subsystem timeout / Shock Wave System
6127	Subsystem timeout / Actual Brightness Value
6128	Subsystem timeout / Ultrasound
6130	Start up tim out MC1 (D4a)
6131	Start up timeout MC2 (D4b)
6132	Start up timeout MC3 (D4c)
6133	Start up timeout / Collimator
6134	Start up timeout / Operator-Master
6135	Start up timeout / Image Store
6136	Start up timeout / Shock Wave System
6137	Start up timeout / Actual Brightness Value
6138	Start up timeout / Ultrasound

Ultrasound

Error No.	Error text displayed on the service PC	Meaning of the error
7001	Timeout from US device	Timeout from ultrasound system
7002	Error with block reception from US unit	Error in block reception from ultrasound system
7003	Error during transmission to US unit	Error during transmission to ultrasound system
7004	Module emitter buffer not free	Module emitter buffer not empty
7010	Incorrect ID in reception block	Incorrect ID in reception block
7011	Incorrect length of reception block	Incorrect length of reception block
7100	No Litho US applicator connected	No ultrasound probe for Litho connected
7101	Error with autom. selection of probe 2	Error in automatic selection of probe 2
7102	Error with autom. realtime selection	Error in automatic realtime selection
7103	Error with autom. cursor display	Error in automatic cursor display
7104	Reported target mark position incorrect	Reported target position incorrect

Collimator

Error No.	Error text displayed on the service PC	Meaning of the error
8001	Collimator timeout	
8002	Collimator data reception error	
8003	CAN-communication disturbance	Possible defect on board D1 in the collimator
8004	Collimator signalling invalid data	
8005	CAN chip is faulty	
8010	RAM test D1 failure	
8011	EEPROM test D1 failure	
8012	CAN Error D6	
8015	Collimator height: calculation error	
8016	Collimator width: calculation error	
8020	Collimator height: stepping error	
8021	Collimator width: stepping error	
8024	Collimator height: limit switch actuated	
8025	Collimator width: limit switch actuated	

Generator

Error No.	Error text displayed on the service PC	
9000	Subsystem not configured	
9010	Received block too long	
9011	Timeout Board D2	
9012	Init data transmitted after runup	
9013	Faulty writing attempt	
9020	XCU not ready	Check fuse F8 in the Videomed DIM
9021	Contact to XCU interrupted	
9022	Turn-off message during operation	
9023	XCU not transmitting data	
9100	Invalid telegram mode	
9101	Invalid AP_ID in telegram	
9102	Invalid object ID from Board D2	
9103	Invalid object length	
9110	Invalid object ID for control unit	
9111	Invalid value for automatic fluoro data	
9112	Invalid value for fluoro alarm data	
9113	Invalid value for mode fluoro data	
9114	Invalid value for I.I. zoom	
9115	Invalid value for TV image reversion	
9116	Invalid value for x-ray data	
9117	Invalid value for system data	
9118	Invalid value for focus data	
9119	Invalid operating mode	
911A	Invalid value for tube loading	
911B	Invalid value for acknowledgement byte	
9120	Invalid obj.ID for I.I. functional unit	
9121	Invalid value for I.I. func. unit: ZOOM	

Image memory errors received from MEMOSKOP

NOTICE	**Error codes E101 to EDFF are messages from MEMOSKOP.**

Error text displayed on the service PC: **"**Error text not available"

Error No.	Meaning of the error
E101	Hardware error on board D1 in the Memoskop. Internal test routine in the Memoskop. Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images).
E102	External RAM test error of the D1 processor in the Memoskop. During the initialization routine, the RAMs are erased- if this is not possible, this error is displayed. External test not possible. Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images).
E103	Checksum test for the configuration byte is wrong (board D1). Check the configuration (refer to the service instructions below). Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images).
E104	Checksum error Flash EPROM (board D1, Memoskop). Check the software status in the Download menu. Ensure that the Memoskop status is "up to date". Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images).
E105	Board D2 in the Memoskop does not respond. Check whether board D2 is correctly inserted in the Memoskop. Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images).
E106	CPU 2 bus on board D2 defective. The internal tests in the Memoskop show errors. Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images).
E108	Memoskop: Prozessor D1 Stack overflow No test Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images).
E109	Image text incorrectly loaded the checksum test. Was a text allocated to the image? Check the 50/60 Hz configuration. Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images). Correct the configuration. Replace board D6.
E402	No communication with CPU 2 after a Reset. Check whether boards D1 and D2 are correctly inserted in the Memoskop. Replace board D2 in the Memoskop. Replace the backplane board D5. Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images).

Error No.	Meaning of the error
E403	Timeout during communication with CPU 2 Check the software status in the Download menu. BILD.HEX Memoskop HARD.HEX hard disk Ensure that the Memoskop status is "up to date". If the status is "different" or "not available", perform the software download routine. Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images)
E404	Error during polling of CPU 2 version. Check the software status in the Download menu. Ensure that the Memoskop status is "up to date". If the statis is "different" or "not available", perform the software download routine. Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images).
E480 bis E4E2	MEMOSKOP Hard disk error Board D2 defective Cable defective Hard disk defective
E601	Text controller test incorrect. Internal test in the Memoskop. No external test possible. Replace text controller D6. Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images).
E602	Text controller RAM test incorrect. Internal test in the Memoskop. No external test possible. Replace text controller D6. Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images).
E610	Keyboard interface test Baud rate too low. Replace the keyboard of the Memoskop. Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images).
E611	Keyboard interface test Baud rate too high. Replace the keyboard of the Memoskop. Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images).
E612	Keyboard interface test Baud clock missing. Replace the keyboard or the keyboard cable of the Memoskop. Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images).
E620	Keyboard interface test, feedback error Replace the keyboard or the keyboard cable of the Memoskop. Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images).

Error No.	Meaning of the errors
E621	Keyboard Interface-Test Feedback Timeout. Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images).
E710	Memoskop video sync test: H sync signal period too long. Check connections transformer T1 - plug D1/X13 in Memoskop. Check the fuses F2; F3; F4; F5. Replace the defective fuses. Correct connections transformer T1 - plug D1/X13. Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images).
E711	Memoskop video sync test: H sync signal period too short. Check connections transformer T1 -plug D1/X3 in Memoskop. Check the fuses F2; F3; F4; F5. Replace the defective fuses. Correct connections transformer T1 - plug D1/X13. Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images).
E712	Memoskop BAS (CVS) syc test: H sync signal missing. Check connections transformer T1 - plug D1/X3 in Memoskop. Check the fuses F2; F3; F4; F5. Replace the defective fuses. Correct connections transformer T1 - plug D1/X13. Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images).
E720	Memoskop video sync test: 50 Hz VR sync period too long. Check connections transformer T1 - plug D1/X3 in Memoskop. Check the fuses F2; F3; F4; F5. Replace the defective fuses. Correct connections transformer T1 - plug D1/X13. Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images).
E721	Memoskop video sync test: 50 Hz VR sync period too short. Check connections transformer T1 - plug D1/X3 in Memoskop. Check the fuses F2; F3; F4; F5. Replace the defective fuses. Correct connections transformer T1 - plug D1/X13. Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images).
E722	Memoskop video sync test: 60 Hz VR sync period too long. Check connections transformer T1 - plug D1/X3 in Memoskop. Check the fuses F2; F3; F4; F5. Replace the defective fuses. Correct connections transformer T1 - plug D1/X13. Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images).
E723	Memoskop video sync test: 60 Hz VR sync period too short. Check connections transformer T1 - plug D1/X3 in Memoskop. Check the fuses F2; F3; F4; F5. Replace the defective fuses. Correct connections transformer T1 - plug D1/X13. Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images).

Error No.	Meaning of the errors
E724	Memoskop BAS (CVS) sync test: VR sync missing. Check connections transformer T1 - plug D1/X3 in Memoskop. Check the fuses F2; F3; F4; F5. Replace the defective fuses. Correct connections transformer T1 - plug D1/X13. Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images).
E730	Memoskop BAS (CVS) sync test: H sync level error Check connections transformer T1 - plug D1/X3 in Memoskop. Check the fuses F2; F3; F4; F5. Replace the defective fuses. Correct connections transformer T1 - plug D1/X13. Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images).
E731	Memoskop BAS (CVS) sync test: Error PLL lock. Check connections transformer T1 - plug D1/X3 in Memoskop. Check the fuses F2; F3; F4; F5. Replace the defective fuses. Correct connections transformer T1 - plug D1/X13. Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images).
E740	Memoskop BAS (CVS) sync test: VR interrupt missing. Check connections transformer T1 - plug D1/X3 in Memoskop. Check the fuses F2; F3; F4; F5. Replace the defective fuses. Correct connections transformer T1 - plug D1/X13. Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images).
E750	Memoskop BAS (CVS) sync test: Incorrect callup parameters. Multiline: check pixel clock and composite video signal of TV system. Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images). Replace the camera head of the Videomed DI.
E800	Memoskop voltage test: Reference voltage ADC too high. No test. Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images).
E801	Memoskop voltage test: Reference voltage ADC too low. No test. Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images).
E810	Memoskop voltage test: Voltage VPPmin. too high. (Programming voltage for Flash-EPROMS). No test. Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images).
E811	Memoskop voltage test: Voltage VPPmin. too low. No test. Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images).
E812	Memoskop voltage test: Voltage VPPmax. too high. No test. Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images).

Error No.	Meaning of the errors
E813	Memoskop voltage test: Voltage VPPmax. too low. No test. Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images).
E814	Memoskop voltage test. Voltage VPP not present. Check the fuses in the Memoskop. Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images).
E820	Memoskop voltage test: Voltage 5V analog too high (>6V). The LED +5V in the Memoskop must light with normal brightness. Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images).
E821	Memoskop voltage test: Voltage 5V analog too low (<4V). Check the LED display in the Memoskop, the LED +5V (green) must light up. Check fuse F3 in Memoskop and replace, if necessary. Check connections X13 in Memoskop and correct, if necessary. Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images).
E830	Memoskop voltage test: Voltage -5.2V too high. The LED 5V2 in the Memoskop must light with normal brightness. Check connections X13 in Memoskop and correct, if necessary. Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images).
E831	Memoskop voltage test: Voltage -5.2V too low. Check fuse F4 in Memoskop and replace, if necessary. Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images).
E840	Memoskop voltage test: Voltage VEE analog -5V too high. Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images).
E841	Memoskop voltage test: Voltage VEE analog -5V too low. Check the LED "VEE" (green) on the Memoskop - the LED must light up. Check fuse F5 in Memoskop and replace, if necessary. (Monitor synchronization no longer present). Replace board D1 in the Memoskop (Observe the configuration 50/60 Hz, 3 or 100 images).
EA1H	DPR err: write access invalid subsys.no.
EA2H	DPR err: write access too high subsys.no.
EA3H	DPR err: read access invalid subsys.no.
EA4H	DPR err: read access too high subsys.no.
EC21	Memoskop not ready for download. Check the LED displays on the Memoskop. Check the connection: Service PC HOST/D1. Try download routine again. Adjust the service PC, if necessary Image memory (errors from Multiline)

Error No.	Meaning of the error
ED14	Memoskop Board D2 data checksum error during download Error detected in checksum during data transfer. during download of Memoskop Board D2 help: Malfunction of data line; Check plug connections; Board D1 defective
ED21	Memoskop D2 not ready for download Request sent for download, however, Memoskop not yet ready. during download of Memoskop Board D2
ED22	Memoskop Board D2 DBI too long during download Excessively long data word detected during download. during download of Memoskop Board D2 help: Fault in Memoskop; Board D2
ED23	Memoskop D2 address outside of area during download Selected address lies outside of permissible area during download of Memoskop Board D2
ED24	Memoskop Board D2 incorrect data checksum during download Data transferred with incorrect checksum. during download of Memoskop Board D2 Help: Malfunction of data line. Check plug connections.
ED31	Memoskop Board D2 FEPROM erase error during download Memoskop cannot be cleared during download of Memoskop Board D2 Help: Board D2, D1 defective. +15 V supply voltage, X13
ED32	Memoskop Board D2 FEPROM programming error during download After each write operation to the FEPROM, the input value is read back. If the value read does not agree with the value written, an error is displayed. during download of Memoskop Board D2 Help: FEPROM defective; +15 V supply voltage, X13 Board D2, D1 defective
ED33	Memoskop Board D2 FEPROM1 programming error during download No data can be written to FEPROM1 during download of Memoskop Board D2 Help: FEPROM defective; +15 V supply voltage X13 Board D2, D1 defective
ED34	Memoskop Board D2 FEPROM2 programming error during download No data can be written to FEPROM2. during download of Memoskop Board D2 Help: FEPROM defective +15 V supply voltage, X13 Board D2, D1 defective
ED35	Memoskop Board D2 FEPROM erase error during download The FEPROM is completely erased prior to programming. If this proves impossible, an error message appears during download of Memoskop Board D2 Help: FEPROM defective + 15 V supply voltage, X13 Board D2, D1 defective
ED36	Memoskop Board D2 FEPROMS all bytes already 0

Error No.	Meaning of the errors
ED41	Memoskop Board D2 unknown test number during download An unknown test number was called up during download of Memoskop Board D2
ED42	Memoskop Board D2 unknown DBI in HX_REQUEST during download Unknown data bit detected during polling of configuration during download of Memoskop Board D2
ED43	Memoskop Board D2 wrong segment during download Software error during download of Memoskop Board D2
ED44	Memoskop Board D2 wrong test DBI during download Software error during download of Memoskop Board D2
ED45	Memoskop Board D2 wrong segment during download Software error during download of Memoskop Board D2
ED51	Memoskop Board D2 unknown telegram from HOST during download
ED52	Memoskop Board D2 receive error during download Error in data reception by HOST during download of Memoskop Board D2 Memoskop-HOST connection; Software error
ED53	Memoskop Board D2 transmit error during download Error in data transmission by HOST during download of Memoskop Board D2 Memoskop-HOST connection
ED61	Memoskop Board D2 +12 V Vpp out of tolerance during download + 12 V programming voltage not o.k. during download of Memoskop Board D1 Help: Connector X13 on board D1; Board D1 defective; Power unit voltage supply
ED62	Memoskop D2 + 12,4V Vpp out of tolerance dur. download + 12 V programming voltage not o.k. during download of Memoskop D1 Help: Connector X13 on board D1; Board D1 defective; Power unit voltage supply
ED63	Memoskop Board internal test failed during download Error during internal test during download of Memoskop Board D2
ED71	Memoskop Board D2 FEPROM checksum error during download Checksum of FEPROMs incorrect End of download of Memoskop Board D2 Help: FEPROM defective

Image memory errors received from Multiline

NOTICE	Error codes EE00 to EF90 are messages from Multiline.

Error No.	Error text displayed on the service PC	
EE00	Start of reset not signalled	
EE01	End of reset not signalled	
EE02	Unexpected reset timeout	
EE03	Timeout during job acknowledge	
EE04	Job terminated by error	
EE05	Job acknowledged due to invalid DBI-NR	
EE10	Invalid message of operator master	
EE17	Invalid DBI received	
EE18	Data block of wrong length received	
EE19	Loss of polling signal from BS detected	BS = MEMOSKOP
EF00	Invalid operating block (INFTYP)	
EF01	Invalid master command byte	
EF02	Invalid M_to_H-Message (Master to D1)	
EF03	Unknown error signalled	
EF04	Slave number not configured	
EF07	Master transmission error	
EF08	BS subsystem configured incorrectly	
EF09	BS subsystem configured incorrectly	
EF13	BS does not respond	
EF14	BSHD does not respond	
EF23	NAK reception error for BS	NAK = no acknowledge
EF24	NAK reception error for BSHD	BSHD = MEMOSKOP Harddisk
EF33	NAK reception error from BS	
EF34	NAK reception error from BSHD	
EF43	Invalid block length from BS	
EF44	Invalid block length from BSHD	
EF53	Image Storage does not respond ACK/NAK	
EF54	Hard disk does not respond ACK/NAK	
EF60	Acquisition active without fluoro	
EF70	Acquisition timeout during fluoro	
EF80	Timeout acknowledgement "SH_Ready"	(SH = from Slave to D1)
EF90	Timeout acknowledgement "SH_Stop"	

General errors

Error No.	Error text displayed on the service PC	Meaning of the error
F000	Incompatible AST version	
F001	Z_No. of execution control too large	
F010	Software timer array overflow	
F100	Invalid Watchdog configuration	
F200	Watchdog has responded	
F500	C-MOS Data (D1) are deleted	
F600	EEPROM error (checksum)	
F700	RAM error (checksum)	

Boot Software

Error No.	Error text displayed on the service PC	Remedial actions
F800	Error in watchdog test	Perform Reset; if no change: Perform DOWNLOADroutine If no change: Replace board D1.
F801	Error in RAM test	
F802	Battery discharge	Replace the battery
F803	Error in Test1 COM1 D1.X10	Perform Reset; if no change: Perform DOWNLOADroutine If no change: Replace board D1.
F804	Error in Test1 COM2 D1.X11	
F807	Timer 0 error (D1)	
F808	Timer 1 error (D1)	
F809	Timer 2 error (D1)	
F80A	Timer 3 error (D1)	
F80B	Timer 4 error (D1)	
F80C	Timer 5 error (D1)	
F80D	Flash - EEPROM on D1 defective	
F80E	EEPROM - checksum is incorrect	
F80F	Watchdog counter init error	
F810	EPROM counter too high (D1)	
F811	The system is not initialized	
F812	Error in writing process	
F813	Error in comparison of desired and actual values	
F814	Error while writing checksum	

Internal software errors

Error No.	Error text displayed on the service PC	Meaning of the error
FE00	Invalid motor number	
FE01	Invalid ADC channel number	
FE02	Queue overrun for LED control	
FE03	Software internal error	
FE04	Temporary buffer overflow messages	
FE05	Alternating buffer overflow messages	
FE06	Acknowledgeable buff. overflow messages	
FE07	Buffer overflow of keyboard storage	
FE08	Msg No <> Err No with msg delection	
FE40	Invalid BS command (PUSH_BS_CMD)	
FE41	Invalid BS status (S_BS_Stat)	
FE42	Invalid parameter (G_BS_Slave)	
FE43	Invalid parameter (G_BS_CmdAct)	
FE44	Invalid parameter (S_BS_CmdAct)	
FE45	Invalid parameter (G_BS_Stat)	
FE46	Invalid parameter (HS-Modus)	
FE47	Transfer data buffer overflow	
FE48	Data block buffer overflow	
FE70	Parameter error "PUSH_US_CMD"	
FE80	Target position outside admission position / X	Target position outside permissible position (X drive)
FE81	Target position outside admission position / Y	Target position outside permissible position (Y drive)
FE82	Target position outside admission position / Z	Target position outside permissible position (Z drive)
FE90	Parameter error "PUSH_XCS_CMD"	
FE91	Parameter error "Fluoro mode"	
FE92	Parameter error "Direct_mode"	
FE93	Inadmissible value in "FE_BV_ZOOM"	Unacceptable value in "FE_BV_Zoom"
FE94	Inadmissible value in "XCS_STAT()"	Unacceptable value in "XCS_STAT()"

Operating system errors

"Start-Up-Message: No HOST-Communication"

Meaning: This message is displayed during booting of the operating PC as long as no Dual Port RAM (DPR) communication is running;

"Interface-Error: DUEP-POLLING-TIME-OUT"

Meaning: The plug-in card reports via the DPR interface that polling is no longer recognized at the DUEP interface
(Communication fault);

"Interface-Error: HOST-DATA-OVERFLOW"

Meaning: If the HOST transmits data faster than can be forwarded to the operating PC, then this message is displayed;

"Interface-Error: NEW-INIT-REQUEST"

Meaning: The plug-in card requests resynchronization of the DPR communication because of internal errors (e.g. watchdog reset);

"Interface-Error: TIME-OUT-INIT"

Meaning: A timeout was detected during the booting synchronization of the DPR interface;

"Interface-Error: TIME-OUT-SEND"

Meaning: A timeout has occurred while transmitting data via DPR interface to the plug-in card (DPR communication error);

"Interface-Error: INVALID-DPR-FLAG"

Meaning: The DPR communication protocol was not observed
(DPR communication fault);

"Interface-Error: CHECKSUM-ERROR"

Meaning: A checksum error has been detected while receiving data via DPR interface (DPR communication error);

"Interface-Error: RECEIVE-BUFFER FULL"

Meaning: The operating PC has received data too fast and an internal data overflow has occurred;

"Interface-Error: SEND-BUFFER FULL"

Meaning: The operating PC has generated more data blocks than can be sent and thus triggered an internal data overflow;

Board D51 of the operating PC

7-segment display

The following messages are shown on the 7-segment display:

0 Normal operation (DUEP polling and DPR interface OK)
1 DUEP communication error, but DPR interface OK
2 DPR communication error, but DUEP interface OK
3 DPR and DUEP communication error
4 Error in the analog part of the board or on the processor
5 Error on the internal timer of the processor
6 External RAM error
7 EPROM or program RAM error
8 Status after reset
9 nc

Decimal point

80C535 works=>DP flashes (ADC/D<DUEP card sign of life)

LED displays:

The following messages are output via LEDs:
- Watchdog has responded
- Card is being booted by PC
- AT bus working (PC sign of life)

AP - IDxx displays

The following AP-ID codes are displayed on the control monitor

		Meaning			Meaning
AP-ID:	16	VIDEOMED DI	AP-ID:	241	Service PC
AP-ID:	80	POLYDOROS	AP-ID:	242	MULTILINE
AP-ID:	240	XCU	AP-ID :	243	I.I. system

These error codes indicate the error group. In order to receive the specific error information, the service PC must be connected to the XCU (generator D200) and then the error memory can be read out.

The	POLYDOROS LX 30/50	Troubleshooting instructions R63-020.072...
	POLYDOROS SX 65/80	Troubleshooting instructions R63-055.072...
and the	VIDEOMED DI/DIM	Service instructions RX52-022.061...

contain information on the causes of errors.

Error No.:	Meaning:	Remedial actions:
00	Normal operation ok One of the HW tests not successful	Replace PC board
10-IF 39-IF 51-53	ACS software errors	Switch the component off and then on again or replace PC board or (PROMs)
20-2F 37-38 55-5F	Operating error by HOST-SW	Correct on HOST system
36 50	Temporary ACS high load problem	Recovers by itself
34 35 63	Communication with the service PC disrupted or terminated	
30	Power failure with subsequent reconfiguration	normal or [power line] unstable PCB. FOC must be checked
31	No network partner found or FOC not connected	normal or FOC. PCBs must be checked
32	Node-ID in network is present several times	Check node-IDs in the network
33	Transmission repeat	normal or unstable PCB, FOC must be checked
54	ACS firmware in network not compatible	Check the ACS SW version
60	No network partner found	normal or FOC PCBs must be checked
61, 62	No connection to the HOST system	Check the HOST system
V1	Decimal point changes frequently: ACS net is not stable; along with the message number 30	
V2	Decimal point flashes: correct program run	

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Overview of operating status displays

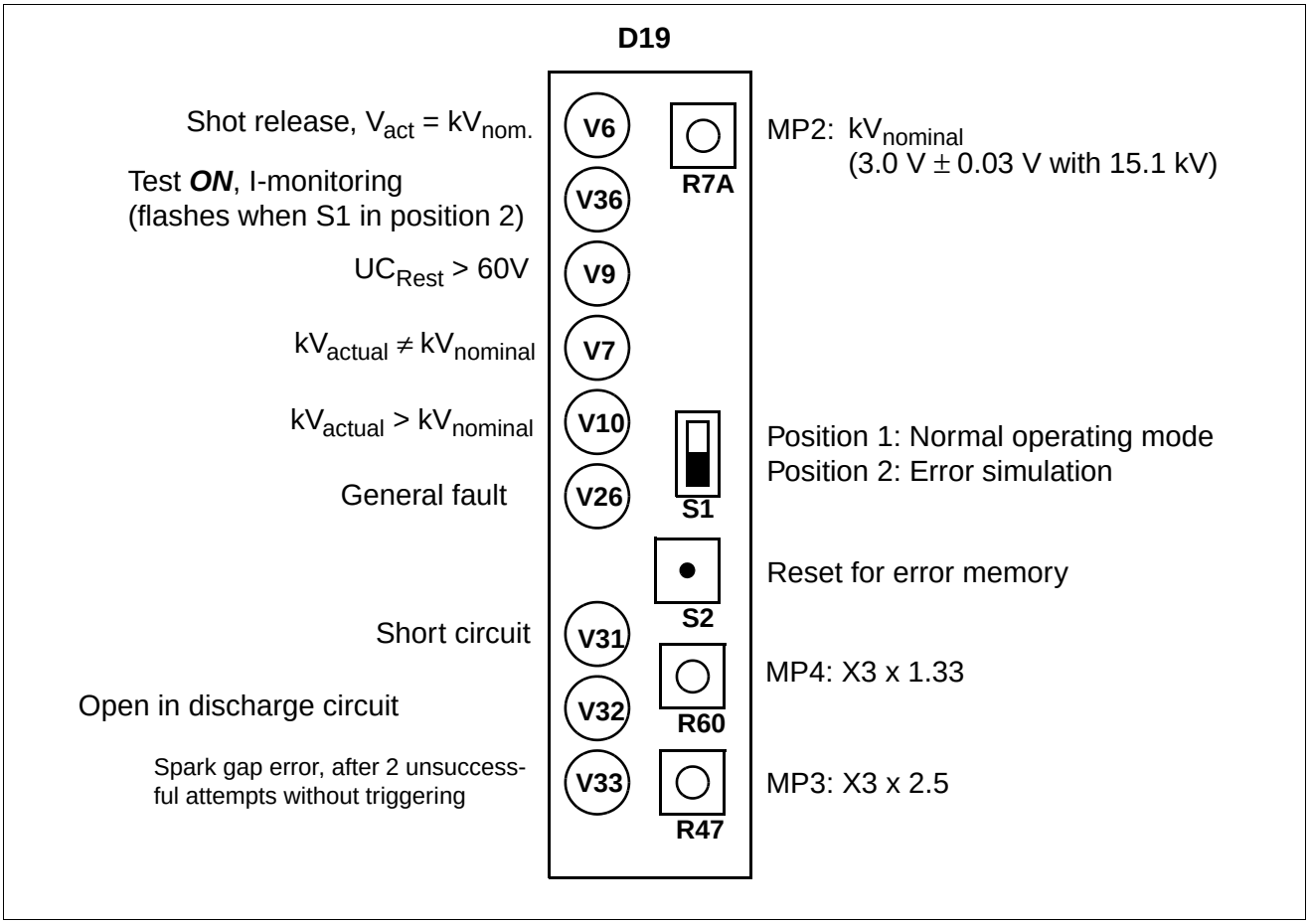


Fig. 1

Check the LEDs on circuit board D19 (Fig.1) to determine which monitoring control has responded.

Red LED V7: kV nominal value ($kV_{nominal}$) from board D15 and the kV actual value ($kV_{nominal}$) at the capacitor differ.

Red LED V10: The kV actual value (kV_{actual}) at the capacitor is greater than 23 kV.

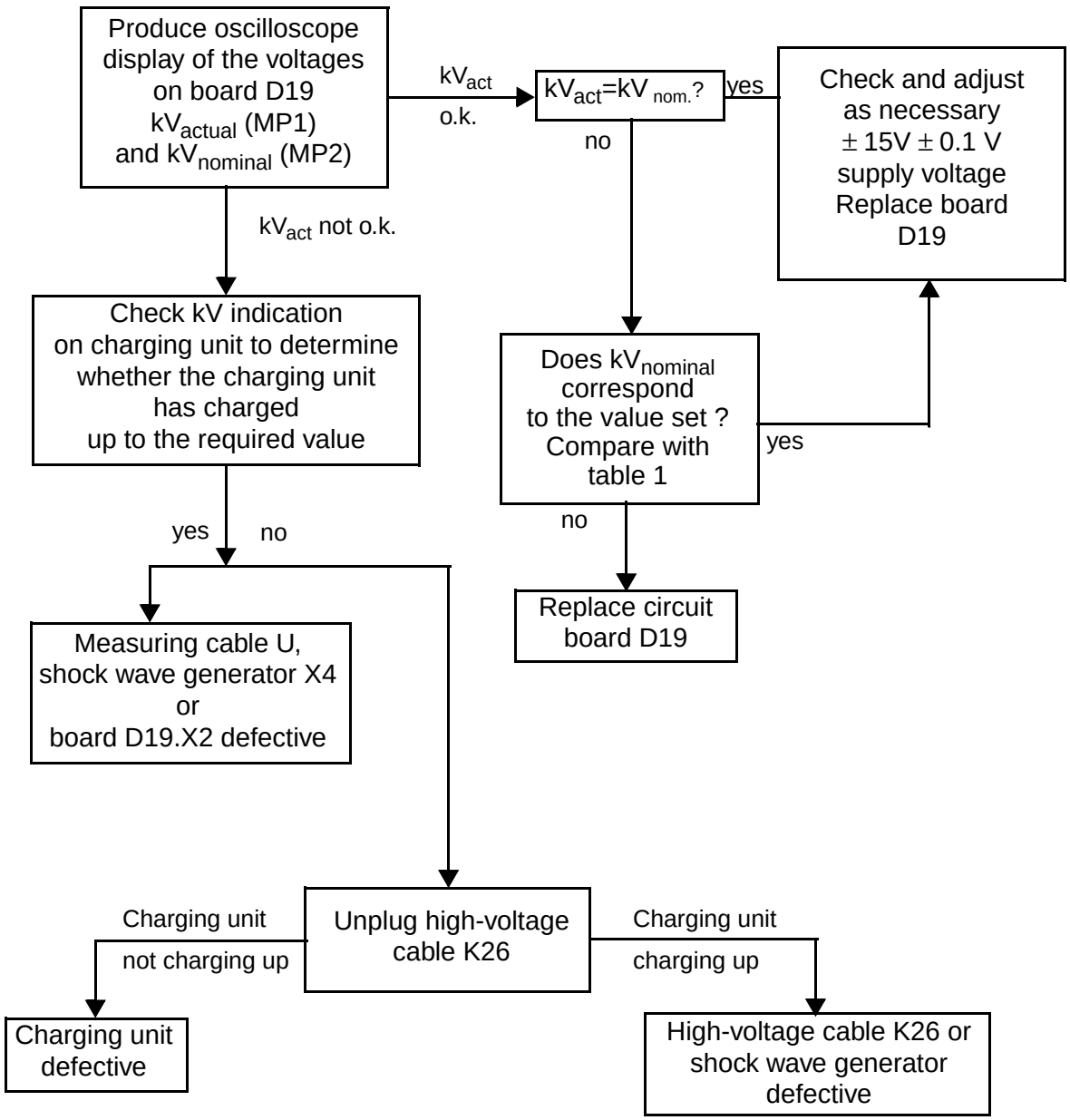
Yellow LED V31: The current through the shock wave head I_{dis} is too high.

Yellow LED V32: The current through the shock wave head I_{dis} is too low.

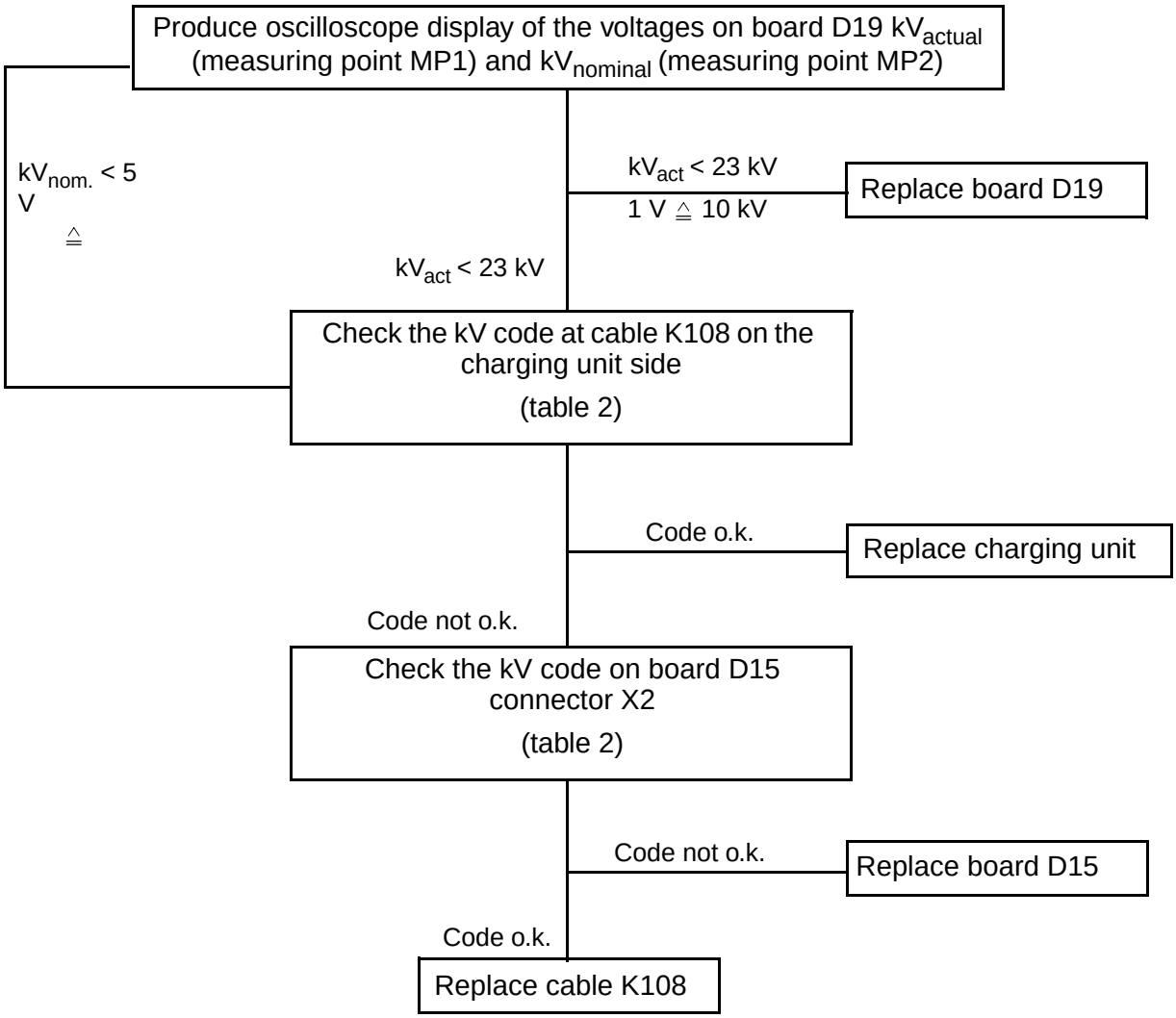
Yellow LED V33: Spark gap ignition occurred twice without triggering.

NOTICE **For settings on board D19, refer to instructions "Repair of shock wave system" RXL2-120.091...**

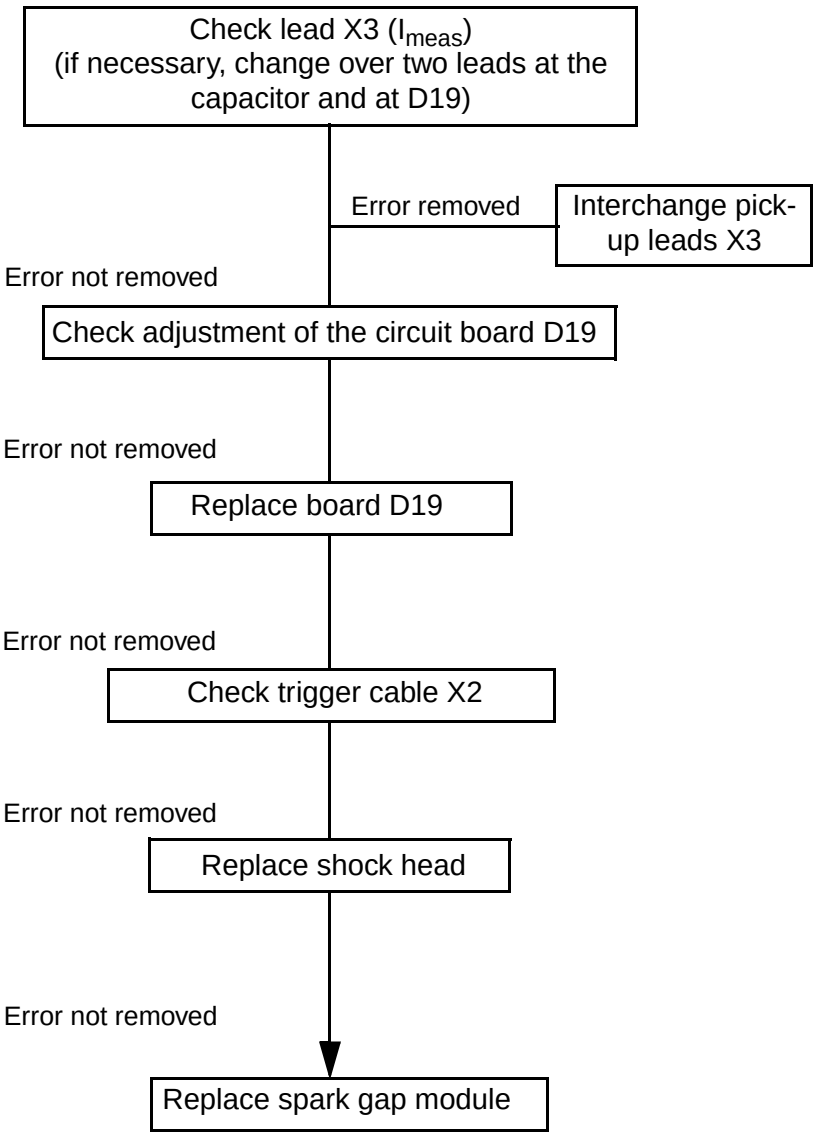
V7 ($kV_{actual} \neq kV_{nominal}$) / Board D1 display: 5382


Produce oscilloscope display of the voltages on board D19 kV_{actual} (MP1) and $kV_{nominal}$ (MP2)
kV_{act} o.k.
kV_{act}=$kV_{nom.}$?
yes
Check and adjust as necessary ± 15V ± 0.1 V supply voltage Replace board D19
no
kV_{act} not o.k.
Check kV indication on charging unit to determine whether the charging unit has charged up to the required value
Does $kV_{nominal}$ correspond to the value set ? Compare with table 1
yes
no
yes
no
Replace circuit board D19
Measuring cable U, shock wave generator X4 or board D19.X2 defective
Charging unit not charging up
Unplug high-voltage cable K26
Charging unit charging up
Charging unit defective
High-voltage cable K26 or shock wave generator defective

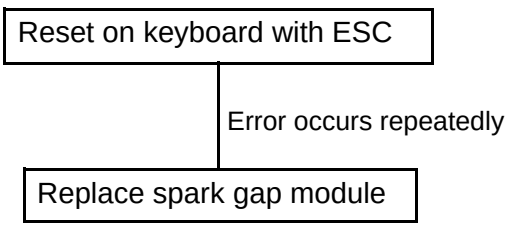
Red LED V10 ($kV_{actual} > kV_{nominal}$) / Board D1 display: 5381


Produce oscilloscope display of the voltages on board D19 kV_{actual} (measuring point MP1) and $kV_{nominal}$ (measuring point MP2)
$kV_{nom.}$ < 5 V ≙
kV_{act} < 23 kV
1 V ≙ 10 kV
Replace board D19
kV_{act} < 23 kV
Check the kV code at cable K108 on the charging unit side (table 2)
Code o.k.
Replace charging unit
Code not o.k.
Check the kV code on board D15 connector X2 (table 2)
Code not o.k.
Replace board D15
Code o.k.
Replace cable K108

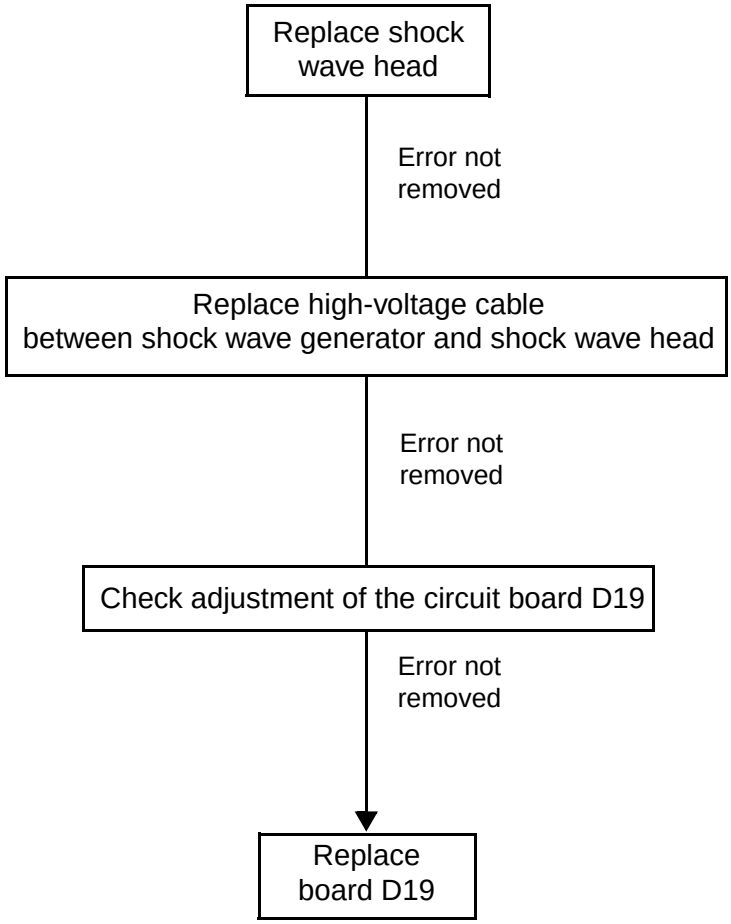
Yellow LED V32 (discharge current too low) / Board D1 display:5282


Check lead X3 (I_{meas})
(if necessary, change over two leads at the capacitor and at D19)
Error removed
Interchange pick-up leads X3
Error not removed
Check adjustment of the circuit board D19
Error not removed
Replace board D19
Error not removed
Check trigger cable X2
Error not removed
Replace shock head
Error not removed
Replace spark gap module

Yellow LED V33 (spontaneous ignition of the spark gap)
Board D1 Display: 5281



Yellow LED V31 (discharge current too high) Board D1 display: 5383


Replace shock wave head
Error not removed
Replace high-voltage cable between shock wave generator and shock wave head
Error not removed
Check adjustment of the circuit board D19
Error not removed
Replace board D19

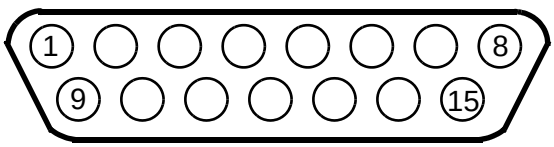
kV reference values		
Energy levels on keyboard	**kV Indication charging unit ± 0.2 kV**	**D19 MP 2 (1 kV = 0.2 V)**
0.1	9.5	1.9 V ± 0.03 V
0.2	9.9	
0.3	10.4	
0.4	10.8	
0.5	11.2	
0.6	11.7	
0.7	12.1	
0.8	12.6	
0.9	12.9	
1.0	13.4	
1.5	13.7	
2.0	13.9	
2.5	14.2	
3.0	14.5	
3.5	14.7	
4.0	15.1	3.0 V ± 0.03 V
4.5	15.3	
5.0	15.5	
5.5	15.9	
6.0	16.2	
6.5	16.5	
7.0	16.8	
7.5	17.1	
8.0	17.4	
8.5	17.8	
9.0	18.1	3.64 V ± 0.03 V
9.5	18,3	
10.0	18.4	
10.5	18.7	
11.0	18.9	
11.5	19.3	
12.0	19.6	

Tab. 1

		MSB							LSB	0 V
	W15	d32	d30	d28	d26	d24	d22	d20	d18	z24
	K6	3	4	5	6	7	10	11	12	2
	K108. N12	3	4	5	6	7	10	11	12	18
	K108. charging unit	1	2	3	4	5	6	7	8	9
Energy levels	0.1	0	1	0	1	0	0	0	1	
	0.2	0	1	0	1	0	0	1	0	
	0.3	0	1	0	1	1	0	0	0	
	0.4	0	1	0	1	1	1	0	0	
	0.5	0	1	0	1	1	1	1	1	
	0.6	0	1	1	0	0	0	1	1	
	0.7	0	1	1	0	0	1	1	1	
	0.8	0	1	1	0	1	0	1	1	
	0.9	0	1	1	0	1	1	1	0	
	1.0	0	1	1	1	0	0	1	0	
	1.5	0	1	1	1	0	1	0	0	
	2.0	0	1	1	1	0	1	1	0	
	2.5	0	1	1	1	1	0	0	1	
	3.0	0	1	1	1	1	0	1	1	
	3.5	0	1	1	1	1	1	0	1	
	4.0	1	0	0	0	0	0	0	0	
	4.5	1	0	0	0	0	0	1	0	
	5.0	1	0	0	0	0	1	0	0	
	5.5	1	0	0	0	0	1	1	1	
	6.0	1	0	0	0	1	0	1	0	
	6.5	1	0	0	0	1	1	0	0	
	7.0	1	0	0	0	1	1	1	1	
	7.5	1	0	0	1	0	0	0	1	
	8.0	1	0	0	1	0	1	0	1	
	8.5	1	0	0	1	0	1	1	1	
	9.0	1	0	0	1	1	0	1	0	
	9.5	1	0	0	1	1	0	1	1	
	10.0	1	0	0	1	1	1	0	0	
	10.5	1	0	0	1	1	1	1	1	
	11.0	1	0	1	0	0	0	0	1	
	11.5	1	0	1	0	0	1	0	0	
	12.0	1	0	1	0	0	1	1	1	

Tab. 2

K108 pin assignment on the charging unit



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Overview of operating status displays

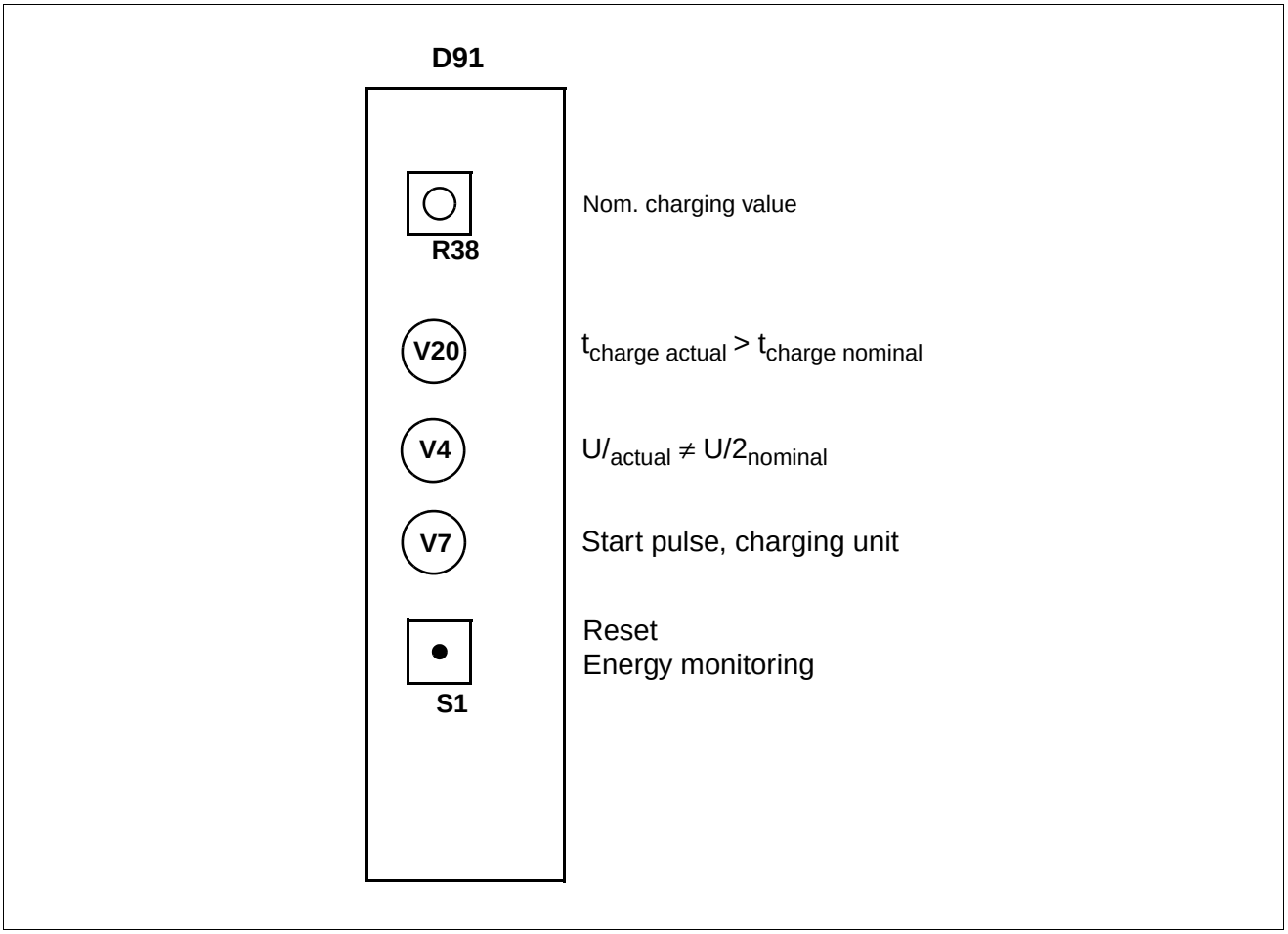


Fig. 1

Check the LEDs on circuit board D91 (Fig.1) to determine which monitoring controls have responded.

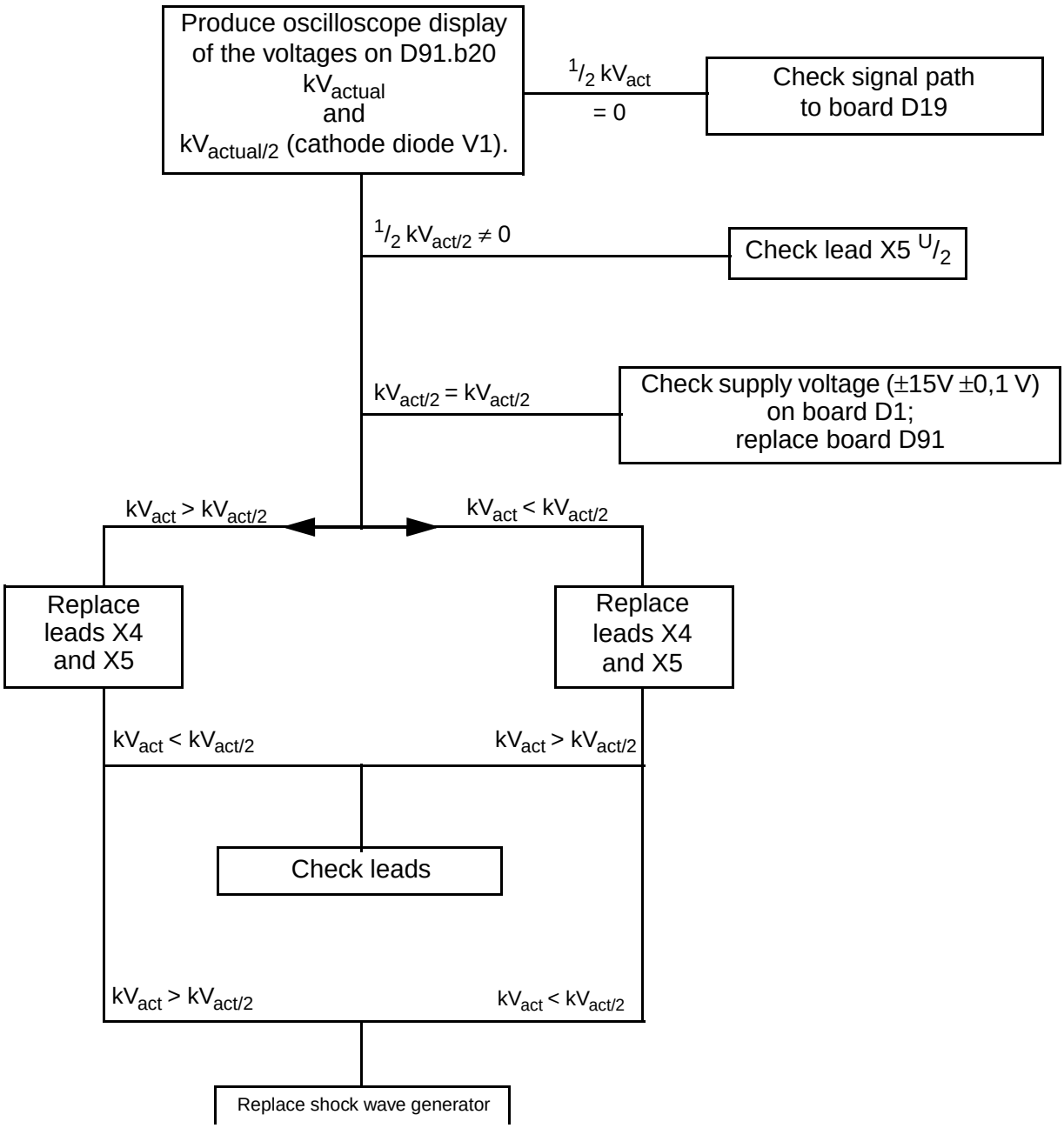
Red LED V4: Half the capacitor voltage U/2 and full capacitor voltage U differ.

Yellow LED V20: The acceptable charging time has been exceeded.
(The LED lights only briefly in the event of an error)

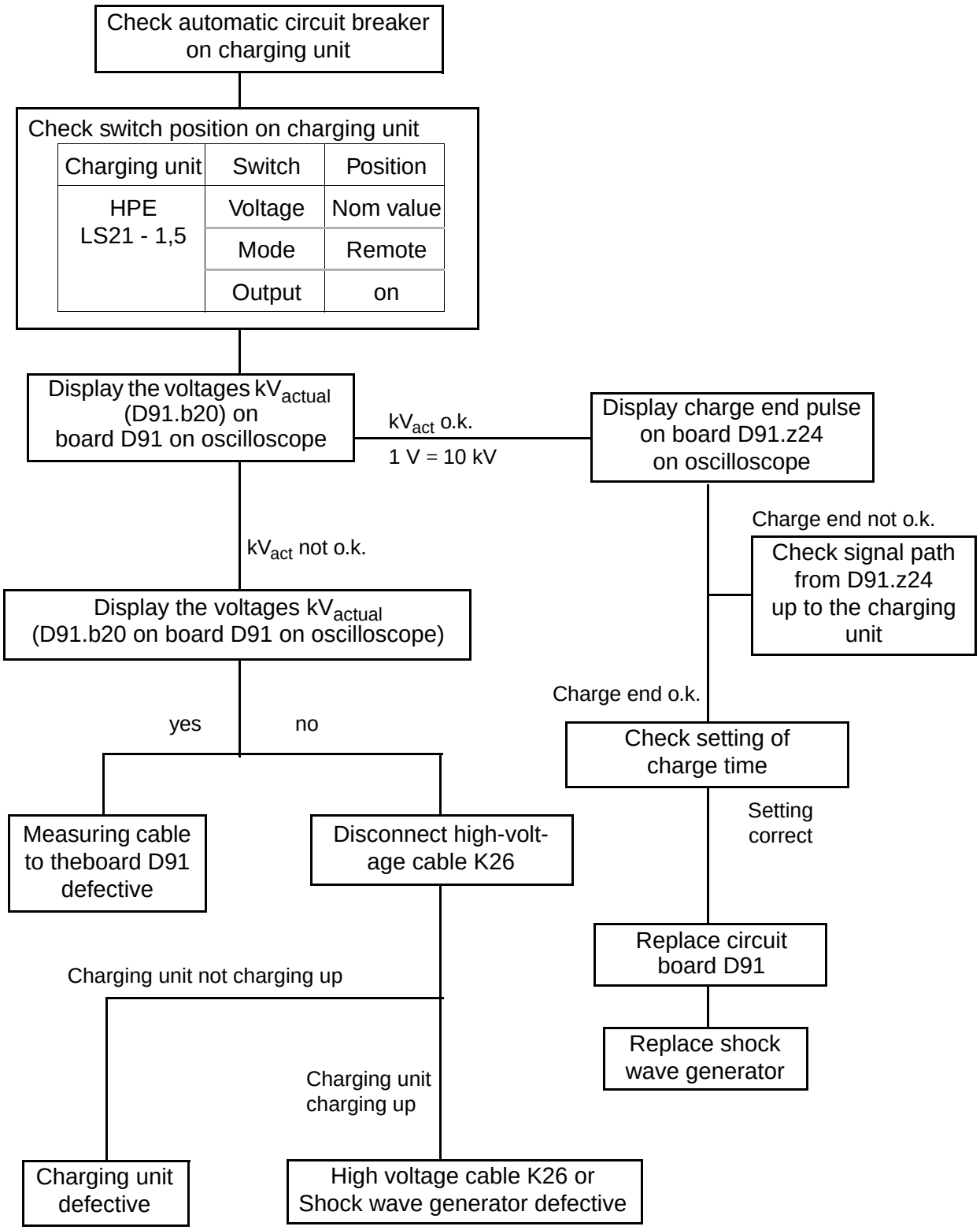
When the shock wave generator has produced more than one million shots, the high-volt age stability may have decreased. This makes it likely that board D91 has responded.

NOTICE **For settings on board D91, refer to the instructions "Maintenance of shockwave system" RXL2-120.091...**

Red LED V4 (kV_{actual} not equal to $kV_{nominal}$) / Board D1 display: 5391


Produce oscilloscope display of the voltages on D91.b20 kV_{actual} and $kV_{actual/2}$ (cathode diode V1).
$^1/_2\ kV_{act}$ = 0
Check signal path to board D19
$^1/_2\ kV_{act/2} \neq 0$
Check lead X5 $^U/_2$
$kV_{act/2} = kV_{act/2}$
Check supply voltage (±15V ±0,1 V) on board D1; replace board D91
$kV_{act} > kV_{act/2}$
$kV_{act} < kV_{act/2}$
Replace leads X4 and X5
Replace leads X4 and X5
$kV_{act} < kV_{act/2}$
$kV_{act} > kV_{act/2}$
Check leads
$kV_{act} > kV_{act/2}$
$kV_{act} < kV_{act/2}$
Replace shock wave generator

Yellow LED V20 (charging time exceeded Board D1 display: 5391


Check automatic circuit breaker on charging unit
Check switch position on charging unit
Charging unit
Switch
Position
HPE LS21 - 1,5
Voltage
Nom value
Mode
Remote
Output
on
Display the voltages kV actual (D91.b20) on board D91 on oscilloscope
kV act o.k.
1 V = 10 kV
Display charge end pulse on board D91.z24 on oscilloscope
Charge end not o.k.
Check signal path from D91.z24 up to the charging unit
kV act not o.k.
Display the voltages kV actual (D91.b20 on board D91 on oscilloscope)
Charge end o.k.
yes
no
Check setting of charge time
Setting correct
Measuring cable to theboard D91 defective
Disconnect high-voltage cable K26
Replace circuit board D91
Charging unit not charging up
Replace shock wave generator
Charging unit charging up
Charging unit defective
High voltage cable K26 or Shock wave generator defective

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Letters appear scattered across the monitor.

Cause: defective text module on board D1 in the Memoskop.

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Chapter 0	Revision level increased, table of contents adjusted
Chapter 4 - 27	Error F812 - new inserted Error F813 - new inserted Error F814 - new inserted

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